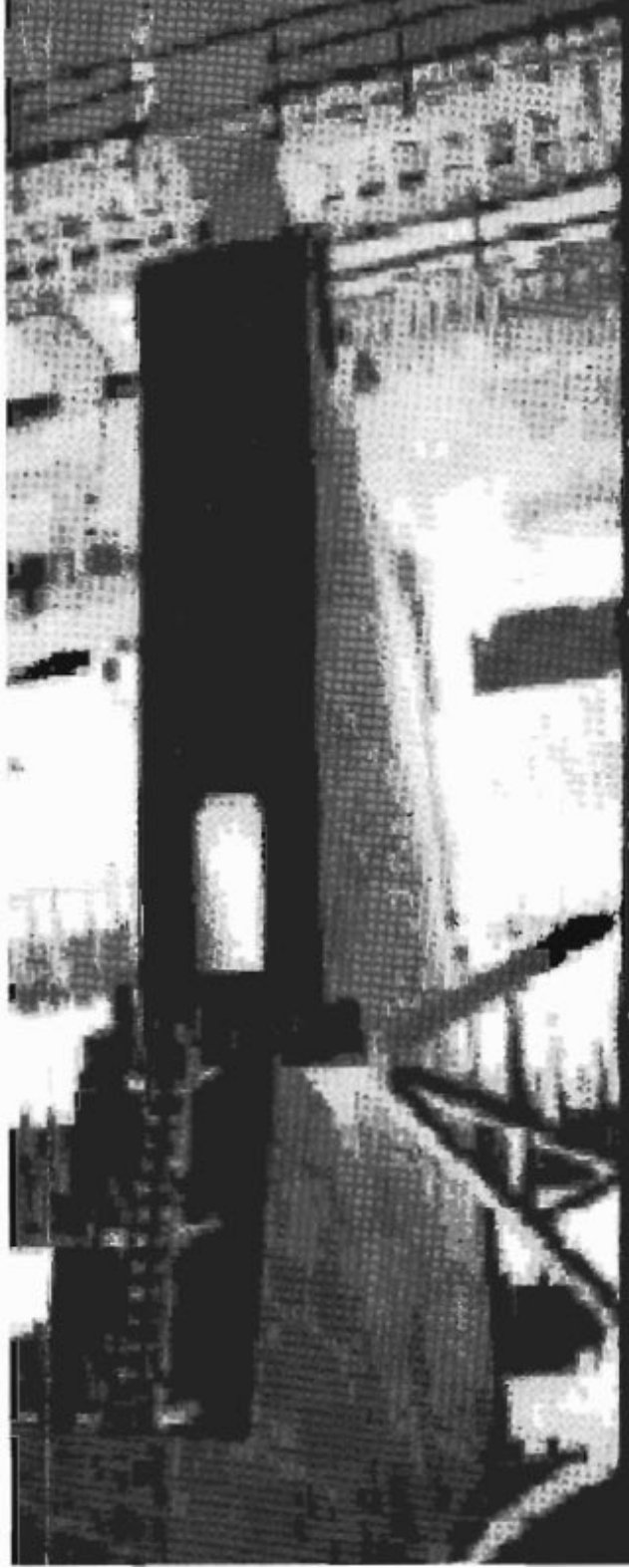


Big Dam Era

BIG DAM ERA

A Legislative and Institutional History of the Pick-Sloan Missouri Basin Program.

by

JOHN R. FERRELL

MISSOURI RIVER DIVISION
U.S. ARMY CORPS OF ENGINEERS
OMAHA, NEBRASKA
1993

BIG DAM ERA

To

GILBERT C. FITE

Teacher & Great Plains soulmate.

Contents

BIG DAM ERA

Forward

This is the story of the Missouri River Division's sixty year relationship with one of America's greatest rivers — the wide Missouri. The story begins in 1933 with the construction of Fort Peck Dam in Montana and the establishment of the Missouri River Division in Kansas City. It concludes with the complex management challenges the Division faces today as it celebrates sixty years of dedicated service to the Nation and the people of America's Heartland. The focus of the narrative is on the six main stem dams that were built between 1933 and 1964 that today are managed as a single system.

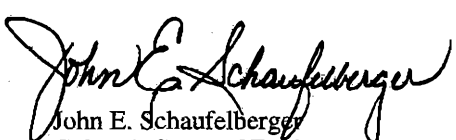
In order to address problems and opportunities associated with management of the reservoir system, it is important to look back in time and account for changes and events that have taken place since the system was authorized. Except for the Fort Peck project, the dams and reservoirs in this system were authorized by the Flood Control Act of 1944 which implemented the Pick-Sloan plan. Big Dam Era synthesizes this important legislative history.

This book demonstrates how the regional political culture has shaped the development and management of the main stem system. Water resources development and management are not left to just the technical solutions or solely to experts. Interest groups, elected officials, and the public are rightfully involved. The Missouri

basin states have continued to be active participants in the decision making process.

Central to the challenge of providing improved water resources management is developing institutions through which the complex, conflicting issues of water management can be examined in an impartial, objective way. This book details the institutional history of the Missouri River main stem system and highlights the contributions personnel of the Missouri River Division have made to the successful management of the system.

Big Dam Era contributes to our understanding of the legislative and institutional history of the Missouri River main stem system. This understanding helps us meet our stewardship responsibilities regarding wise management of this great natural resource for the benefit of the American people. This book clearly illustrates the need for our engineers and scientists to be concerned with more than the technical aspects of projects. They must consider the social, economic, environmental, and political aspects of each undertaking. This is the great lesson to be learned from this examination of the U. S. Army Corps of Engineers' involvement in the planning, development, and operation of the Missouri River main stem reservoir system.



John E. Schaufelberger
Colonel, Corps of Engineers
Commander, Missouri River Division

Bald Eagle by Sallie Zydek

Preface

The drainage basin of the Missouri River provided an ideal setting in which to undertake a massive river development effort. The potential benefits were high. Recurring floods throughout the basin had caused extensive destruction. Periods of severe and widespread drought caused enormous suffering and economic loss.

The watershed region is characterized by extremes. From an elevation of 380 feet above sea level at the mouth, the river winds 2,300 miles to its

headwaters elevation of 4,050 feet above the sea. The basin lays over more than half a million square miles, encompassing all of one state, portions of nine more and extending across the international boundary into Canada. Precipitation varies widely in this vast watershed, from an annual mean of 40 inches in the southeast interior highlands, to a scant 10 inches in areas of the dry upland plains, rising again to 40 inches in the mountains. Precipitation deviates widely from the mean in each of these physiographic divisions.

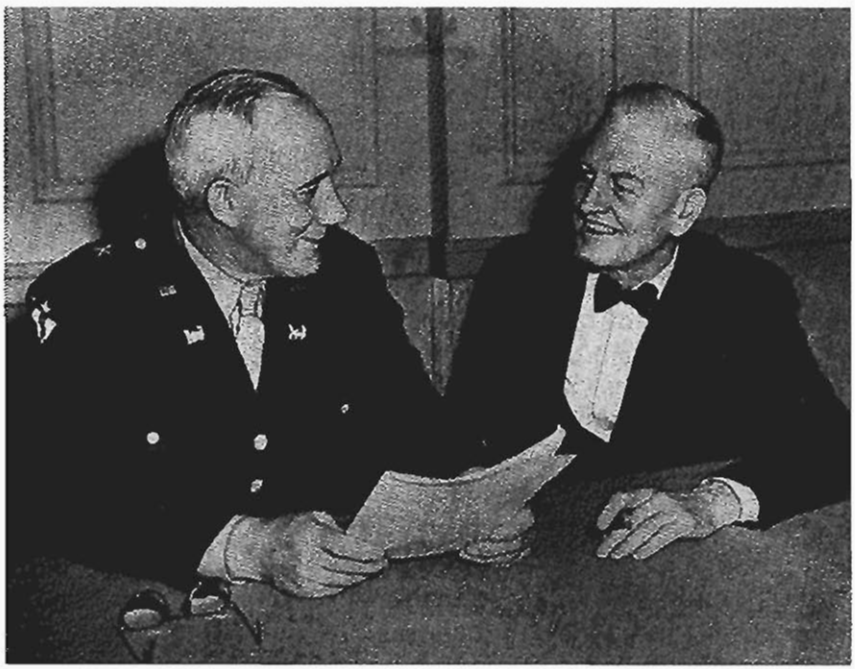
Flow characteristics of the unregulated Missouri River manifested these extremes. Calendar year natural runoff above Sioux City has fluctuated from a low of 10.7 million acre-feet in 1931 to a high of 40.6 million acre-feet in 1978. Natural runoff for a one-month period has ranged from

180 thousand acre-feet in August 1988 to 13.2 million acre-feet in April of 1952.

The river's potential yield of benefits was evident in this pattern of excesses and deficiencies. The long term mean natural flow exceeded 24 million acre-feet a year at Sioux City. It was a water supply sufficient to satisfy the desires of the upper western semi-arid sections for an array of consumptive uses. The lower and eastern sections of the basin wanted to store high river stages upstream to reduce damages from flooding and regulate low flows for navigation and municipal and industrial supplies.

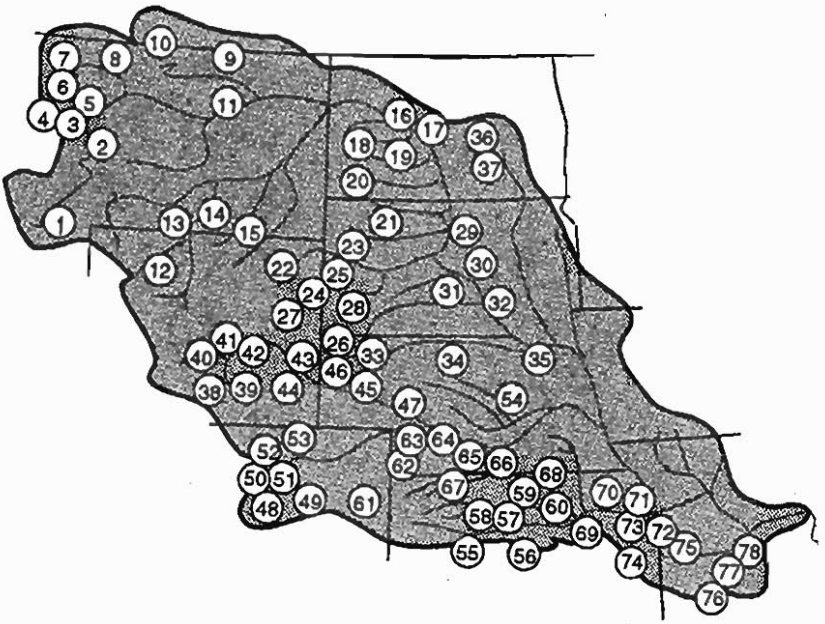
Geographic conditions in the upper main stem river above Sioux City were ideal to serve these needs. In this area of the Dakotas and Montana, draining some 280,000 square miles, a number of sites were suitable for building big dams capable of creating reservoirs with large storage areas. The first step toward harnessing the runoff in the upper basin was in 1933 with construction by the Corps of Engineers of Fort Peck in eastern Montana.

Plans for further control of the Missouri River were developed by the



General Lewis A. Pick and William Glenn Sloan.

Missouri River Basin
Bureau of Reclamation Subbasins
In Sloan Plan



NO	DEVELOPMENT	AGENCY
1	HAP HAWKINS	BR
2	CANYON FERRY	BR
3	WILLOW CREEK	BR
4	GIBSON	BR
5	PISHKUN	BR
6	FOUR HORNS	BIA
7	TWO MEDICINE	BIA
8	TIBER	BR
9	NELSON	BR
10	FRESNO	BR
11	FORT PECK	CE
12	BUFFALO BILL	BR
13	BIGHORN	BR
14	WILLOW CREEK	BIA
15	TONGUE RIVER	O
16	SAKAKAWEA	CE
17	AUDUBON	CE
18	E. A. PATTERSON	BR
19	TSCHIDA	BR
20	BOWMAN-HALEY	CE
21	SHADE HILL	BR
22	KEYHOLE	BR
23	BELLE FOURCHE	BR
24	DEERFIELD	BR
25	PACTOLA	BR
26	ANGOSTURA	BR
27	COTTONWOOD SPRINGS	CE
28	COLDBROOK	CE
29	OAHE	CE
30	BLUNT	BR
31	SHARPE	CE
32	FRANCIS CASE	CE
33	BOX BUTTE	BR
34	MERRITT	BR
35	LEWIS & CLARK	CE
36	JAMESTOWN	BR
37	PIPESTEM	CE
38	SEMINOE	BR
39	KORTES	BR
40	PATHFINDER	BR
41	GRAY REEF	BR
42	ALCOVA	BR
43	GLENDO	BR
44	GUERNSEY	BR
45	MINATARE	BR
46	ALICE	BR
47	LAKE MCCONAUGHY	O
48	CHATFIELD	CE
49	CHERRY CREEK	CE
50	ESTES	BR
51	RATTLESNAKE	BR
52	CARTER	BR
53	HORSETOOTH	BR
54	SHERMAN	BR
55	CEDAR BLUFF	BR
56	KANOPOLIS	CE
57	WILSON	CE
58	WEBSTER	BR
59	KIRWIN	BR
60	WAGONOA	BR
61	BONNY BR	BR
62	SWANSON	BR
63	ENDERS	BR
64	HUGH BUTLER	BR
65	HARRY STRUNK	BR
66	HARLAN COUNTY	CE
67	NORTON	BR
68	LOVEWELL	BR
69	MILFORD	CE
70	TUTTLE CREEK	CE
71	PERRY	CE
72	CLINTON	CE
73	POMONA	CE
74	MELVERN	CE
75	HARRY S. TRUMAN	CE
76	STOCKTON	CE
77	POMME DE TERRE	CE
78	LAKE OF OZARKS	O

Corps and the Bureau of Reclamation. Known as the Pick Plan after the head of the Corps' Missouri River Division and the Sloan Plan for the Assistant Regional Director of the Bureau of Reclamation's Region 6, the two programs were coordinated and then included in the Flood Control Act of 1944. Chapters One, Two, and Three detail the legislative history of the Pick-Sloan plan. More than 100 reservoirs throughout the Missouri basin were authorized by this legislation, but its cardinal feature was the integrated multiple-purpose plan for five additional main stem dams to be built by the Corps of Engineers.

These giant mounds of compacted earth form a series of reservoirs with a storage capacity of more than 74 million acre-feet and a surface area of over one million acres. This is the largest system of reservoirs in the United States. The ratio of reservoir storage to annual runoff in this drainage area is 3.1 acre-feet of storage for each acre-foot of natural runoff. It is this magnitude, combined with the techniques of operating the six main stem dams as an entity, which provides the flexibility and sustained delivery of service characteristic of this system.

Legal responsibility for operating the main stem reservoirs within the scope of the enacting legislation was delegated by Congress to the Chief of Engineers and to his representative, the Division Engineer of the Missouri River Division. Within these legislated responsibilities lay considerable areas of choice, the exercise of which might reconcile or further estrange the diverse interests of the watershed region.

The Corps and other interests have sought a range of alternative institutional devices and arrangements to manage the Missouri River. The authority model in lieu of the traditional agency model is examined in Chapter Four. Chapters Five and Six trace the institutional history of water resources development and management in the Missouri basin since the Pick-Sloan plan.

Integrated system operation is described in Chapter Seven. Diverse interests throughout the vast area of the basin provide advice and recommendations to ensure that multiple-purpose operations provide benefits to the sub-areas they represent. Unfortunately, some sub-areas receive more benefits than others. Sharply divergent views have existed over the distribution of benefits and upon how the main system should be managed. Management challenges are examined in Chapter Eight. Operation of the Missouri River main stem reservoirs involves the integration of many diverse factors in order to obtain optimum benefits to the region

from this major water resources development.

I am grateful to a number of people who worked with me on this legislative, institutional, and operational history of the main stem Pick-Sloan Missouri River basin program. Lloyd Jackson managed the manuscript production and typesetting with an even temperament and professional skills. Tom Hudson and Dave Boganowski display their creative graphics skills throughout this publication. Sallie Zydek contributed her beautiful artwork of Missouri basin creatures.

This manuscript was greatly improved by the thorough reading and editing of Dr. Martin Reuss and Kathy Richardson. My special thanks to Marilyn Hunter who graciously shared her knowledge and facilitated many necessary details involved with this publication. I thank my friend Larry Crump for a wealth of thoughtful suggestions and advice. Without the help of these colleagues, often given at personal sacrifice in time and effort, I could not have accomplished my assignment.

John Ferrell

Missouri River Basin

I.
Flood Control Plans

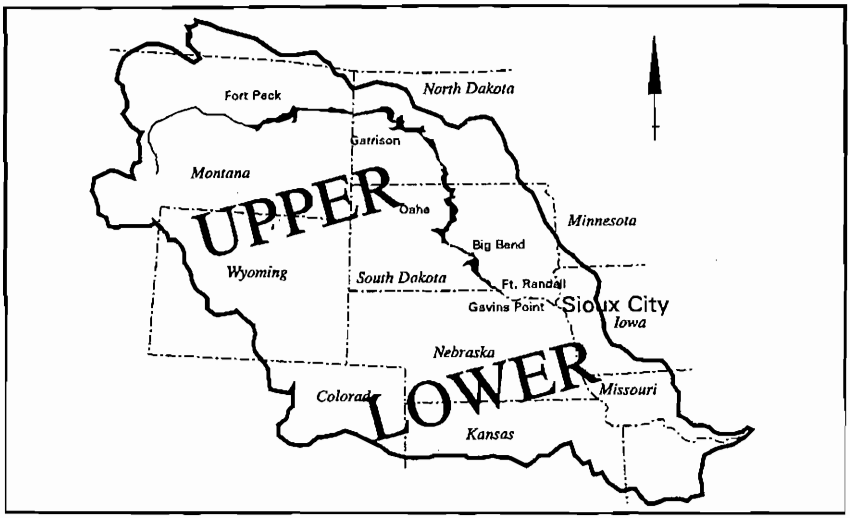
Unlikely cooperative partnerships were formed in the vast drainage area of the Missouri River in 1943. Past ordeals, which threatened to continue, solidified these partnerships. Despite diverse objectives, special-interest groups where united by their common fear of a depression. The result was a regional coalition sufficient to secure U.S. government approval for an extensive river basin development program.

Concerns about a postwar depression were based on history. After World War I, cash crop and livestock prices fell below production costs. Agriculture markets were weak and demand for basin products low. The

Drought-caused Erosion on Great Plains, 1938.

basin's people and its predominantly agricultural economy faced a long period of economic hardship. Ironically, this fiscal distress coincided with severe drought conditions that further desiccated much of the region.

The drought and depression had two major negative effects. Between 1930 and 1940, the average value of land and buildings per farm acre declined. Second, the basin farm population decreased because of migration out of the region. During the 1930s, four basin states (North Dakota, South Dakota, Nebraska, and Kansas) lost total population but gained urban population. Two states (Iowa and Montana) gained total population



Upper and Lower Missouri River Basin.

but lost rural population. Three states (Missouri, Wyoming, and Colorado) gained both rural and urban population.[1]

Negative demographic trends were accelerated by World War II. Approximately 300,000 civilians left the Great Plains states of Montana, Wyoming, North Dakota, South Dakota, Nebraska, and Kansas, presumably for employment in war industries outside those basin states. An additional 322,200 residents of the Plains states were in the armed forces. After analyzing this data, demographers concluded in 1943 that about 600,000 persons would be seeking work or government assistance during the postwar period in those six Missouri River basin states.

Special interests advocated federally funded public-works to solve the anticipated problems of a postwar economy. Widespread belief was that without such projects the basin's economy would suffer. Government planners saw a need for action to forestall high unemployment, low production, and high prices. Public-works construction would provide employment for returning servicemen and demobilized industrial workers, stimulate the few industrial centers in the region to diversify from agricultural processing, and attract new business and manufacturing activity.

In the upper basin north of Sioux City, Iowa, and west of the Missouri main stem in the tributary stream areas, some interests advocated irrigation projects to stimulate the postwar economy. Secretary of the Interior Harold L. Ickes addressed the National Reclamation Association in the upper basin city of Denver, Colorado, in September 1943. He told the irrigation interests that the Bureau of Reclamation was prepared to neu-

tralize demobilization's negative effect on the West. Ickes said that the people then serving in the war effort "Must be made to turn the wheels of industries that will maintain peacetime payrolls and afford increased markets for the products of irrigated land."[2]

The upper basin states set up planning councils to create jobs for the day "when Johnny comes marching home."[3] Wyoming's Governor Lester C. Hunt believed this could best be accomplished through public-sector irrigation developments. Irrigation advocates argued that federally funded reclamation projects would prompt veterans and former war-industry workers to return to the region to take construction jobs, to farm the irrigated land, or to work in the support communities. Irrigated agriculture would shelter the region from drought cycles and provide single-family farms. The basin's agricultural economy would prosper and service communities would thrive, according to this regional development concept.[4]

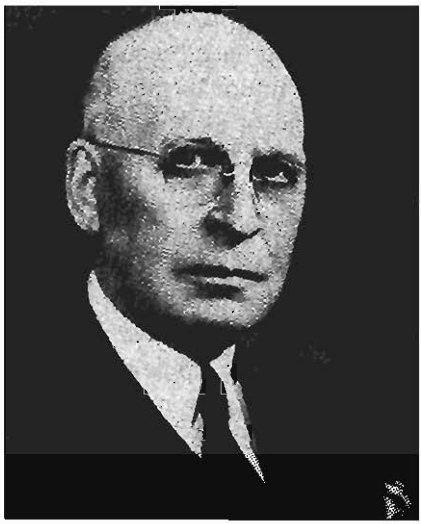
In the U.S. Senate, Wyoming Senator Joseph C. O'Mahoney chaired a subcommittee to advance national economic planning in the postwar period. "America is determined," he said, "that our returning soldiers must not face the 'apple economy' that greeted them after the last war." O'Mahoney was a prominent New Deal Democrat and a strong leader. He also had considerable seniority in the majority party. He was one of several congressmen from the West who spoke force fully for irrigation interests. The senator was among a political elite who aided the upper basin by fostering legislation related to the Missouri River basin water resources development plan.[5]

In the basin south of Sioux City, special interests also wanted public-works to provide jobs in the period of transition to a peacetime economy. As Mayor John B. Gage of Kansas City, Missouri, stated: "We are going to enter a very critical period in our part of the country just as soon as the war is won and these people begin to return and war workers are discharged."[6] Public-works projects for flood control and navigation would help sustain the economy in the critical transition period. In addition, a controlled and navigable river would supposedly strengthen the agricultural economy and help provide an urban-based means to diversify and expand.

Special interests in the Missouri basin had a long history of advocacy of water resources development. In both the lower and upper basins, they had kept the vast region's water problems on the congressional agenda for over 100 years. Congress had appropriated money in 1832 for lower Missouri River navigation improvements; in 1903, the Secretary of the Interior had approved major federal irrigation projects in the upper basin.

When the United States went to war in 1941, the federal government

had authorized or approved a large number of projects for navigation, flood control, irrigation, and hydropower purposes. The War Production Board suspended work on those projects unless they were deemed essential to the war effort. Public-works advocates urged Congress to fund the previously authorized projects as soon as the war ended. They wanted to expand the development programs to provide needed jobs immediately throughout the vast basin.[7]

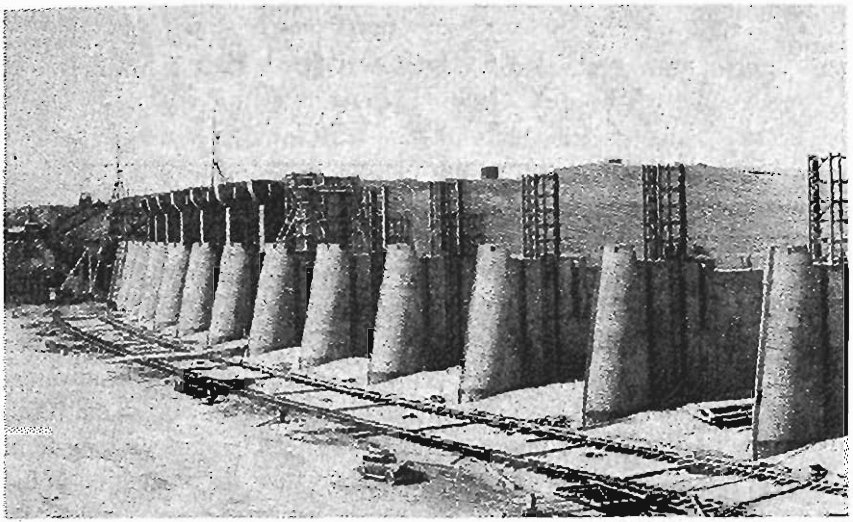


O. S. Warden of Great Falls, Montana.

Delegates attending the Upper Missouri Drainage Basin Committee meeting in December 1941 formulated an agenda to encourage efforts toward a basinwide plan of comprehensive development.[8] At a second meeting in July 1942 at Billings, Montana, delegates from Montana, Wyoming, North Dakota, South Dakota, and Nebraska drafted an invitation to the states of Iowa, Kansas, and Missouri to meet to form a regional watershed organization.[9] O.S. Warden of Great Falls, Montana, chairman of the upper states committee and president of the National Reclamation Association, explained the need for co-operation: "We would like to irrigate as much land in our country as we fairly and consistently can. . . . In reclamation we are in a transition period which concerns the question of the storage of water all the way from downstream to upstream." Warden thought that pursuing these upstream area objectives was a "marvelous opportunity for cooperation between the people of the basin states."[10]

The upper basin states water development advocates had heard William Glenn Sloan, a regional official of the Bureau of Reclamation, describe a planning effort under way to expand irrigation developments in the Missouri basin. But this expansion required that the Secretary of the Interior secure water rights for reclamation projects in compliance with state laws. Western states would resist a federal claim to ownership of the unappropriated water in nonnavigable streams.[11] However, at Fort Peck Reservoir in Montana the federal government had impounded 19.5 million acre-feet of unappropriated water that might be used for irrigation if released from its navigation, hydropower, and flood control purposes under the federal powers contained in the commerce clause of the Constitution.[12]

Irrigation advocates pointed out that the first three Public Works Administration allocations of money for the Fort Peck project were "for the construction of a dam at Fort Peck for water conservation and control of flow of navigation." Upper basin interests contended that the money would not have been allocated at that time had the words "for water conservation" not been included. However, the phrase was dropped when legislation for the Fort Peck Dam finally was submitted to Congress.[13]



Ft. Peck Dam Under Construction.

The Fort Peck project was unique. It was begun in the Depression year 1933 by authority of President Franklin D. Roosevelt rather than through the normal congressional authorization process. The project was to provide jobs in an area of high unemployment and severe economic depression. Roosevelt's authority to order the dam built was vested in the National Industrial Recovery Act of 16 June 1933. Title II authorized the President to create a Federal Emergency Administration of Public Works and, "with a view to increasing employment quickly," gave the President the power to construct public-works projects. In section 202(b), the President was constrained by the proviso "That no river or harbor improvements shall be carried out unless they shall have heretofore or hereafter been adopted by the Congress or are recommended by the Chief of Engineers of the United States Army." The Chief had recommended on 30 September 1933 that a dam be built across the Missouri at the Fort Peck project site. On 14 October, Roosevelt approved Public Works Project No. 30.